IN THE CLAIMS:

Please amend Claims 1 to 10 and add new Claims 11 to 80, as follows:

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1. (Currently Amended) A signal processing apparatus which can output a color ~~chroma~~ signal of m bits as a ~~chroma~~ color signal of n bits ~~by~~ via an output apparatus, comprising:

a gamma converting circuit which converts a primary color ~~means for gamma converting the chroma~~ signal of m bits into a primary color ~~chroma~~ signal of k bits;

a color converting circuit which converts the primary color ~~means for converting the chroma~~ signal of k bits obtained by said gamma converting circuit ~~means~~ into a signal of L bits ~~k bits~~ showing a brightness and a color difference ~~tone~~; and

a bit converting circuit which converts ~~means for converting~~ the signal of L bits ~~k bits~~ showing the color difference ~~brightness and color tone~~ obtained by said color converting circuit ~~means~~ into a signal of n bits showing a color difference signal ~~brightness and a color tone~~,

wherein $m > k \geq L > n$ ~~$m > n = k + 1$~~.

2. (Currently Amended) A signal processing ~~An~~ apparatus according to claim 1, wherein said color converting circuit ~~means~~ converts the primary color ~~chroma~~ signal into color difference signals (Cr, Cb).

3. (Currently Amended) A signal processing ~~An~~ apparatus according to claim 2, wherein said bit converting circuit ~~means~~ linearly converts a signal at a predetermined input level or lower in the color difference signals (Cr, Cb) of L bits ~~k bits~~ obtained by said color converting circuit ~~means~~ into color difference signals (Cr, Cb) of n bits and non-linearly converts

a signal at the predetermined input level or higher into the color difference signals (Cr, Cb) of n bits.

4. (Currently Amended) A signal processing ~~An~~ apparatus according to claim 1, wherein said color converting circuit ~~means~~ converts the primary color ~~chroma~~ signal into color difference ~~chromaticity~~ signals (U, V).

5. (Currently Amended) A signal processing ~~An~~ apparatus according to claim 4, wherein said bit converting circuit ~~means~~ omits one upper bit in the color difference ~~chromaticity~~ signals (U, V) of L bits ~~k bits~~ and outputs n lower bits.

6. (Currently Amended) A signal processing method which can output a color ~~chroma~~ signal of m bits as a color ~~chroma~~ signal of n bits ~~by~~ via an output apparatus, comprising:

a gamma converting step of ~~gamma~~ converting ~~the~~ a primary color ~~chroma~~ signal of m bits into a primary color ~~chroma~~ signal of k bits;

a color converting step of converting the primary color ~~chroma~~ signal of k bits obtained in said gamma converting step into a signal of L bits ~~k bits~~ showing a brightness and a color difference ~~tone~~; and

a bit converting step of converting the signal of L bits ~~k bits~~ showing the color difference ~~brightness and color tone~~ obtained in said color converting step into a signal of n bits showing a color difference signal ~~brightness and a color tone~~,

wherein $m > k \geq L > n$ ~~$m > n = k + 1$~~.

7. (Currently Amended) A signal processing method according to claim 6, wherein the primary color ~~chroma~~ signal is converted into color difference signals (Cr, Cb) in said color converting step.

8. (Currently Amended) A signal processing method according to claim 7, wherein in said bit converting step, a signal at a predetermined input level or lower in the color difference signals (Cr, Cb) of L bits ~~k bits~~ obtained in said color converting step is linearly converted into color difference signals (Cr, Cb) of n bits and a signal at the predetermined input level or higher is non-linearly converted into the color difference signals (Cr, Cb) of n bits.

9. (Currently Amended) A signal processing method according to claim 6, wherein the primary color ~~chroma~~ signal is converted into color difference ~~chromaticity~~ signals (U, V) in said color converting step.

10. (Currently Amended) A signal processing method according to claim 9, wherein in said bit converting step, one upper bit in the color difference ~~chromaticity~~ signals (U, V) of k bits is omitted and n lower bits are output ~~outputted~~.

11. (New) A signal processing apparatus comprising:

a first non-linearization circuit which converts R, G and B primary color signals of m bits into R, G and B primary color signals of k bits ($m > k$) through a non-linear process; and

a second non-linearization circuit which converts a brightness signal of m bits into a brightness signal of L bits ($m > L$) through the non-linear process,

wherein an output bit width n of said first non-linearization circuit and an output bit width L of said second non-linearization circuit satisfy $k > L$.

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12. (New) A signal processing apparatus according to Claim 11, wherein an inclination of a non-linear conversion curve of said first non-linearization circuit is made larger than an inclination of a non-linear conversion curve of said second non-linearization circuit within a high brightness area.

13. (New) A signal processing apparatus according to Claim 11, further comprising a color conversion circuit which converts the R, G and B primary color signals of k bits being output signals from said first non-linearization circuit into color difference signals Cr and Cb.

14. (New) A signal processing apparatus according to Claim 11, further comprising a color conversion circuit which converts the R, G and B primary color signals of k bits being output signals from said first non-linearization circuit into color difference signals U and V.

15. (New) A signal processing apparatus according to Claim 13, further comprising a signal generation circuit which generates one image signal using the output color difference signals Cr and Cb from said color conversion circuit and an output brightness signal Yh from said second non-linearization circuit.

16. (New) A signal processing apparatus according to Claim 14, further comprising a signal generation circuit which generates one image signal using the output color

difference signals U and V from said color conversion circuit and an output brightness signal Yh from said second non-linearization circuit.

17. (New) A signal processing apparatus according to Claim 13, further comprising a bit adjustment circuit which reduces the number of bits of the output color difference signal from said color conversion circuit to the number of bits of an image output apparatus.

18. (New) A signal processing apparatus according to Claim 14, further comprising a bit adjustment circuit which reduces the number of bits of the output color difference signal from said color conversion circuit to the number of bits of an image output apparatus.

19. (New) A signal processing apparatus according to Claim 15, further comprising a bit adjustment circuit which reduces the number of bits of the output color difference signal from said color conversion circuit to the number of bits of an image output apparatus.

20. (New) A signal processing apparatus according to claim 16, further comprising a bit adjustment circuit which reduces the number of bits of the output color difference signal from said color conversion circuit to the number of bits of an image output apparatus.

21. (New) A signal processing apparatus according to Claim 13, further comprising a bit adjustment circuit which reduces the number of bits of the output color

difference signal from said color conversion circuit to a number of bits the same as that of the brightness signal output from said second non-linearization circuit.

22. (New) A signal processing apparatus according to Claim 14, further comprising a bit adjustment circuit which reduces the number of bits of the output color difference signal from said color conversion circuit to a number of bits the same as that of the brightness signal output from said second non-linearization circuit.

23. (New) A signal processing apparatus according to Claim 15, further comprising a bit adjustment circuit which reduces the number of bits of the output color difference signal from said color conversion circuit to a number of bits the same as that of the brightness signal output from said second non-linearization circuit.

24. (New) A signal processing apparatus according to Claim 16, further comprising a bit adjustment circuit which reduces the number of bits of the output color difference signal from said color conversion circuit to a number of bits the same as that of the brightness signal output from said second non-linearization circuit.

25. (New) A signal processing apparatus according to claim 17, wherein said bit adjustment circuit performs bit adjustment through a non-linear process.

26. (New) A signal processing apparatus according to claim 18, wherein said bit adjustment circuit performs bit adjustment through a non-linear process.

27. (New) A signal processing apparatus according to claim 19, wherein said bit adjustment circuit performs bit adjustment through a non-linear process.

28. (New) A signal processing apparatus according to claim 20, wherein said bit adjustment circuit performs bit adjustment through a non-linear process.

29. (New) A signal processing apparatus apparatus according to claim 21, wherein said bit adjustment circuit performs bit adjustment through a non-linear process.

30. (New) A signal processing apparatus according to claim 22, wherein said bit adjustment circuit performs bit adjustment through a non-linear process.

31. (New) A signal processing apparatus according to claim 23, wherein said bit adjustment circuit performs bit adjustment through a non-linear process.

32. (New) A signal processing apparatus according to claim 24, wherein said bit adjustment circuit performs bit adjustment through a non-linear process.

33. (New) A signal processing apparatus according to claim 25, wherein, when either one of the two color difference signals is included in a non-linear area, said bit adjustment circuit performs bit adjustment by applying a gain to the one color difference signal and further corrects the other one of the two color difference signals using the same gain.

34. (New) A signal processing apparatus according to claim 26, wherein, when either one of the two color difference signals is included in a non-linear area, said bit

adjustment circuit performs bit adjustment by applying a gain to the one color difference signal and further corrects the other one of the two color difference signals using the same gain.

35. (New) A signal processing apparatus according to claim 27, wherein, when either one of the two color difference signals is included in a non-linear area, said bit adjustment circuit performs bit adjustment by applying a gain to the one color difference signal and further corrects the other one of the two color difference signals using the same gain.

36. (New) A signal processing apparatus according to claim 28, wherein, when either one of the two color difference signals is included in a non-linear area, said bit adjustment circuit performs bit adjustment by applying a gain to the one color difference signal and further corrects the other one of the two color difference signals using the same gain.

37. (New) A signal processing apparatus according to claim 29, wherein, when either one of the two color difference signals is included in a non-linear area, said bit adjustment circuit performs bit adjustment by applying a gain to the one color difference signal and further corrects the other one of the two color difference signals using the same gain.

38. (New) A signal processing apparatus according to claim 30, wherein, when either one of the two color difference signals is included in a non-linear area, said bit adjustment circuit performs bit adjustment by applying a gain to the one color difference signal and further corrects the other one of the two color difference signals using the same gain.

39. (New) A signal processing apparatus according to claim 31, wherein, when either one of the two color difference signals is included in a non-linear area, said bit

adjustment circuit performs bit adjustment by applying a gain to the one color difference signal and further corrects the other one of the two color difference signals using the same gain.

40. (New) A signal processing apparatus according to claim 32, wherein, when either one of the two color difference signals is included in a non-linear area, said bit adjustment circuit performs bit adjustment by applying a gain to the one color difference signal and further corrects the other one of the two color difference signals using the same gain.

41. (New) A signal processing apparatus according to claim 25, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

42. (New) A signal processing apparatus according to claim 26, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

43. (New) A signal processing apparatus according to claim 27, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

44. (New) A signal processing apparatus according to claim 28, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

45. (New) A signal processing apparatus according to claim 29, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

46. (New) A signal processing apparatus according to claim 30, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

47. (New) A signal processing apparatus according to claim 31, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

48. (New) A signal processing apparatus according to claim 32, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

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49. (New) A signal processing apparatus according to claim 33, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

50. (New) A signal processing apparatus according to claim 34, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

51. (New) A signal processing apparatus according to claim 35, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

52. (New) A signal processing apparatus according to claim 36, wherein, when both the two color difference signals are included ion a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals by using the smaller one of the first and second gains.

53. (New) A signal processing apparatus according to claim 37, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

54. (New) A signal processing apparatus according to claim 38, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

55. (New) A signal processing apparatus according to claim 39, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

56. (New) A signal processing apparatus according to claim 40, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

57. (New) A signal processing apparatus wherein the number of output bits of a non-linearization circuit which non-linearizes primary color signals of an image signal is made different from the number of bits in final recording.

58. (New) A signal processing apparatus according to claim 57, wherein, in regard to the number of bits of a brightness signal system, the number of bits in non-linearizing is made the same as the number of bits in the final recording.

59. (New) A signal processing apparatus according to claim 57, further comprising a color conversion circuit which converts R, G and B primary color signals being output signals from said non-linearization circuit into color difference signals.

60. (New) A signal processing apparatus according to claim 59, further comprising a signal generation circuit which generates one image signal using the color difference signals from said color conversion circuit and an output brightness signal from a brightness signal system.

61. (New) A signal processing apparatus according to claim 59, wherein said color conversion circuit includes a bit adjustment circuit which reduces the number of bits of the color difference signal to equal the number of bits in the final recording.

62. (New) A signal processing apparatus according to claim 60, wherein said color conversion circuit includes a bit adjustment circuit which reduces the number of bits of the color difference signal to equal the number of bits in the final recording.

63. (New) A signal processing apparatus according to claim 59, wherein said color conversion circuit includes a bit adjustment circuit which reduces the number of bits of the color difference signal to a number of bits the same as the number of bits of the brightness signal output from the brightness signal system.

64. (New) A signal processing apparatus according to claim 60, wherein said color conversion circuit includes a bit adjustment circuit which reduces the number of bits of the color difference signal to a number of bits the same as the number of bits of the brightness signal output from the brightness signal system.

65. (New) A signal processing apparatus according to claim 61, wherein said bit adjustment circuit performs bit adjustment through a non-linear process.

66. (New) A signal processing apparatus according to claim 62, wherein said bit adjustment circuit performs bit adjustment through a non-linear process.

67. (New) A signal processing apparatus according to claim 63, wherein said bit adjustment circuit performs bit adjustment through a non-linear process.

68. (New) A signal processing apparatus according to claim 64, wherein said bit adjustment circuit performs bit adjustment through a non-linear process.

69. (New) A signal processing apparatus according to claim 65, wherein, when either one of the two color difference signals is included in a non-linear area, said bit adjustment circuit performs bit adjustment by applying a gain to the one color difference signal and further corrects the other one of the two color difference signals using the same gain.

70. (New) A signal processing apparatus according to claim 66, wherein, when either one of the two color difference signals is included in a non-linear area, said bit adjustment circuit performs bit adjustment by applying a gain to the one color difference signal and further corrects the other one of the two color difference signals using the same gain.

71. (New) A signal processing apparatus according to claim 67, wherein, when either one of the two color difference signals is included in a non-linear area, said bit adjustment circuit performs bit adjustment by applying a gain to the one color difference signal and further corrects the other one of the two color difference signals using the same gain.

72. (New) A signal processing apparatus according to claim 68, wherein, when either one of the two color difference signals is included in a non-linear area, said bit adjustment circuit performs bit adjustment by applying a gain to the one color difference signal and further corrects the other one of the two color difference signals using the same gain.

73. (New) A signal processing apparatus according to claim 65, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

74. (New) A signal processing apparatus according to claim 66, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

75. (New) A signal processing apparatus according to claim 67, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color different signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

76. (New) A signal processing apparatus according to claim 68, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

77. (New) A signal processing apparatus according to claim 69, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

78. (New) A signal processing apparatus according to claim 70, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

79. (New) A signal processing apparatus according to claim 71, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.

80. (New) A signal processing apparatus according to claim 72, wherein, when both the two color difference signals are included in a non-linear area, said bit adjustment circuit compares a first gain to be applied to a first color difference signal with a second gain to be applied to a second color difference signal, and adjusts the gains of the first and second color difference signals using the smaller one of the first and second gains.--